DTE Record Request 1

Request:

Please identify those items in the Haverhill Area Distribution Supply Study which will be directly addressed with the proposed Ward Hill distribution project.

Response:

The MEC portion of the Ward Hill project will resolve the following **Bolded** items copied from bullets 6-8 on page 5 of the Haverhill Study (DTE 1-B-7)

- **Ward Hill's 43L1 and 43L2 distribution feeders are projected to reach 97% and 99% respectively, of their summer thermal capabilities by the end of the study period in 2013. Presently, a single contingency loss of the 43L3 feeder during the summer peak could result in a 43.9 MWH outage, which significantly violates the 20 MWH design criterion.**

- North Haverhill's # 48L1 is projected to reach 98% of its summer thermal capability by the end of the study period in 2013. **Due to the significant load growth in the North Haverhill area there is presently insufficient capacity to pick up all customers during contingency feeder outages. The** 48L1, **48L2, and 48L3 all exceed the 20 MWH design criterion for single contingency outages.**

- East Bradford #65 is a 23 to 13.2kV metal clad substation with one load tap changing (LTC) transformer and two feeders, 65L1 and 65L3. **The 65L3 and #1 LTC are both expected to reach 94% of their summer thermal capabilities by the end of the study period (2013).** Both the 65L1 **and 65L3 exceed the 20 MWH design criterion.**

The Ward Hill project will also resolve loading greater than 90% of design capacity for the following circuits listed in Table I, page 17 of the Haverhill Study (DTE 1-B-7): 32J1, 32J8, 43L1, 43L2, 2379, 65L3, #1 LTC. The proposed project will also relieve the 2354 and 2356 supply lines, providing capacity for future load growth in the areas of Haverhill where 115kV supply is not available.

In addition to loading issues, the Ward Hill project will provide much needed contingency tie capacity and will resolve 20 Mega Watt Hour outages for the following distribution circuits listed in Table II, page 18 of the Haverhill Study (DTE 1-B-7): 43L3, 48L2, 48L3, and 65L3.

Prepared by or under the supervision of Michael J. Busby, P.E.

DTE Record Request 2

Request:

Please provide the cost estimate for the projects as known today. Include the cost for both the distribution and transmission substation projects and the transmission line work associated with the project out to the first pole.

Response:

The following table is extracted from the approved sanction paper entitled **"APPLICATION BY THE NEW ENGLAND POWER COMPANY (NEP) FOR THE NORTH SHORE AREA TRANSMISSION UPGRADE NEAR-TERM PROJECTS,"** which lists the costs associated with the Ward Hill substation expansion and related line reconductoring:

Project	Total
Ward Hill substation Expansion	$ 33,000,000
Ward Hill Transmission line to first pole	$ 1,000,000
Reconductor B-154N/C-155N lines	$ 3,280,000
Reconductor G-133E line	$ 2,130,000
East Methuen upgrade	$ 330,000

The total study grade costs (± 25%) associated with the Ward Hill NEP expansion project are $34,000,000.

The total study grade costs (± 25%) associated with the related 115 kV line reconductoring (beyond the first pole) are $5,740,000.

The total study grade costs (± 25%) associated with the proposed MEC distribution expansion are $3,800,000 (reference KMH MEC testimony on MDTE 04-81, page 2, line 3). This cost estimate includes one (1) transformer, three (3) feeders, getaways and distribution upgrades.

Prepared by or under the supervision of Kathy Horelik, P.E.

DTE Record Request 3

Request:

(a) Please provide an estimate of the traffic flow to and from the project site for both the transmission and distribution projects. Provide the average traffic per day that will be generated during the construction period and the peak daily traffic flow. (b) Based upon the estimated traffic flow evaluate its impact on Route 125 and Cross Street traffic.

Response:

(a) For the transmission project, the peak daily traffic is estimated to be 30 vehicles with an average daily traffic of about 20 vehicles per day over the construction period.

For the distribution project, the peak daily traffic is estimated to be 10 vehicles with an average daily traffic of 8 vehicles per day over the construction period.

These numbers are based on a combination of the workforce commute and delivery trucks.

(b) Due to the close proximity of the project site to major traffic routes (Route 125, a four lane highway and Interstate 495, a six lane interstate), the use of local roads is limited to a short section of Cross Street and Oxford Street. No parking or queuing will be necessary on Cross Street.

Traffic counts performed by Massachusetts Highway Department in March 2004 indicate that the average daily trips on Route 125 south of the 125 connector are over 16,000 trips per day. Given the low estimate of construction traffic as compared to the average traffic on Route 125, the project is not expected to affect Route 125. The Massachusetts Highway traffic counts are attached as Record Request 3 Attachment A.

Prepared by or under the supervision of Daniel McIntyre, P.E.

DTE Record Request 4

Request:

Is ground water or surface water used within a half mile of the Ward Hill substation as a potable water supply or for other purposes?

Response:

State resource mapping records for groundwater and surface sources within a half-mile of the Ward Hill Substation were reviewed and have been located and depicted on the attached the Figure 1 using current MassGIS "datalayer" sources administered by the Massachusetts Executive Office of Environmental Affairs. As shown on Figure 1, there are no known public water supply sources within a half-mile radius of the Ward Hill Substation. Groundwater and surface water records include several types of water supply, including emergency surface water, proposed wells, community groundwater wells, non-transient non-community sources, community surface water sources and protection zones, and transient non-community sources.

The City of Haverhill Health Department records were reviewed to identify private water sources for residences located on residential streets within a half-mile of Ward Hill Substation. City of Haverhill records indicate that there are no known private water service wells in this area.

Prepared by or under the supervision of F. Paul Richards

DTE Record Request 5

Request:

When issued please supply the Department a copy of the Haverhill Conservation Commission's Order of Conditions relative to the projects.

Response:

To be supplied by New England Power Company if received from the Haverhill Conservation Commission before the record closes in DTE 04-66.

Prepared by or under the supervision of F. Paul Richards

DTE Record Request 6

Request:

Please provide the Department copies of the aerial photograph that shows the entire parcel owned by New England Power Company at 48 Cross Road.

Response:

Copies of the requested photograph are attached and have been marked as Attachment A.

Prepared by or under the supervision of Kathy Horelik, P.E.

DTE Record Request 7

Request:

Table 3-4 in the environmental noise assessment marked for the record as NEP/MEC – KMH – 7 describes some of the sources of sound at different monitoring locations. Provide the distance to the nearest existing transformer from location A, NML – 1, location C, R-1 and R-2.

Response:

Please see attached table

Location	Nearest Transformer	Approximate Distance (feet)
A	T7	220
NML-1	L4	160
C	L4	600
R1	L4	330
R2	L4	410

Prepared by or under the supervision of Kathy Horelik, P.E.

DTE Record Request 8

Request:

Provide a compilation of the nameplate sound data for (a) the transformers that are staying (b) the transformers being removed (c) and the transformers being added. Based on that tabulation discuss changes in noise levels that might be experienced in the commercial and residential area in the vicinity of the substation.

Response:

Transformers Remaining	**Rating**	**dBA**	**Comments**
T3	345/115 kV, 268/358/448 MVA	72/74/75 dBA	NEP Filing Guaranteed nameplate
T1	115/24 kV 48/64/80 MVA	75/77/78 dBA	NEP Filing NEMA TR-1
L1	23/13.2 kV 5/6.25/7 MVA	65/67/68 dBA	Not in Filing Data for information only
L2	23/13.2 kV 5/6.25 MVA	65/67 dBA	Not in Filing NEMA TR-1 Data for information only
L3	23/13.2 kV 5/6.25/7 MVA	65/67/68 dBA	Not in Filing NEMA TR-1 Data for information only
L4	23/13.2 kV 5/6.25/7 MVA	65/67/68 dBA	Not in Filing NEMA TR-1 Data for information only

Transformers To Be Removed	**Rating**	**dBA**	**Comments**
T2A	115/24 kV 15/20 MVA	70/72 dBA	NEP Filing NEMA TR-1
T2B	115/24 kV 15/20 MVA	70/72 dBA	NEP Filing NEMA TR-1
T2C	115/24 kV 30/40 MVA	73/75 dBA	NEP Filing NEMA TR-1

Transformers To Be Added	**Rating**	**dBA**	**Comments**
T2	115/24 kV 45/60/75 MVA	71/73/74 dBA	NEP Filing From Purchase Spec
T4	345/115 kV, 268/358/448 MVA	72/74/75 dBA	NEP Filing From Purchase Spec
T5	345/115 kV, 268/358/448 MVA	72/74/75 dBA	NEP Filing From Purchase Spec
T6	345/115 kV, 268/358/448 MVA	72/74/75 dBA	NEP Filing From Purchase Spec
T7	115/13.2 kV 33/44/55 MVA	63/65/66 dBA	MEC Filing NEMA TR-1
T8	115/13.2 kV 33/44/55 MVA	63/65/66 dBA	MEC Filing NEMA TR-1

NEMA TR-1 refers to Table 0-1 of NEMA Publication TR-1 "Audible Sound Levels for oil-immersed power transformers, extracted from National Grid EDP-SUB-30.0

The transformers closest to the commercial and residential areas are located in the upper yard where T1, L1, L2, L3 & L4 are to remain on site. As a result, their contribution to the overall perceived noise is unchanged. Transformers T2A, B, C are to be removed while T2, T7 & T8 will be added. A direct comparison of these transformers is provided below:

Removed	dBA	Added	dBA
T2A	70/72 dBA	T2	71/73/74 dBA
T2B	70/72 dBA	T7	63/65/66 dBA
T2C	73/75 dBA	T8	63/65/66 dBA

As shown on the attached Supplemental Environmental Noise Assessment, the transmission transformers contribute more significantly to changes in noise perceived in the commercial and residential areas than the transformers associated with distribution. The results of the model do not indicate significant impacts related to prominent discrete tones in the 63 Hz, 125 Hz and 250 Hz octave bands. Please see attached memorandum for additional information.

Prepared by or under the supervision of Kathy Horelik, P.E.

DTE Record Request 9

Request:

Please provide a table describing the different impacts of the two projects.

Response:

IMPACTS OF PROPOSED PROJECTS		
	New England Power Company (NEP) 04-66	Massachusetts Electric Company (MEC) 04-81
Land use	About 31,340 square feet will be added to the NEP portion of the yard by expanding the north and south fencelines. *NEP-FPR-1*	About 7,830 square feet will be added to the MEC portion of the yard.
Wetlands	As approved by the Haverhill Conservation Commission, 525 square feet of bordering vegetated wetlands ("BVW") will be filled and replicated elsewhere on the site. The disturbed area within the buffer zone will be 49,000 square feet. The disturbed area within the Riverfront area will be 15,400 square feet. The Haverhill Conservation Commission hearing closed on November 18, 2004.	Project does not trigger Wetland Protection Act or Haverhill Wetland Bylaw jurisdiction.
Water Resources	Merrimack River is about 150 feet to the west (expansion about 25 feet in that direction). No impact to river is anticipated as a result of erosion and sedimentation controls	No impact to the Merrimack River is anticipated.

Storm Water Management	Haverhill Conservation Commission and the Haverhill City Engineer have approved NEP's storm water design report.	N/A
	Storm Water Pollution Prevention Plan (SWPPP) and Notice of Intent will be prepared prior to construction, as required by the Environmental Protection Agency.	
Spill Prevention	Ward Hill Substation Spill Prevention Countermeasures and Control Plan will be updated within six months of installation of new transformers.	
Visibility	Some structures, including lightening masts, will approach 95 feet or more, which is the current maximum height within the substation.	The low profile substation may present a more congested arrangement of equipment than presently exists.
	There is some existing vegetational screening. The viewshed is impacted currently by an active rail line and the existing substation, transmission and distribution facilities.	
Protected Species (Bald Eagle and Shortnose Sturgeon)	By letter dated 10/26/04, NHESP has indicated that there will be no adverse impact on these species.	
EMF	Magnetic field simulations were conducted for anticipated changes in the transmission projects with results provided in *Exhibit KMH-6* EMF in the ROW to South Danvers is expected to increase from 13.4 to 21.4 mG (north edge) and from 67.84 to 68.19 mG (south edge). EMF in the ROW to Tewksbury are expected to decrease from 177.71 to 172.45 mG (northeast edge) and from 35.79 to 32.03 mG (southwest edge) *NEP-KMH-R1* Electric field strengths are	No specific magnetic field simulations were conducted for anticipated changes to the distribution system. However, any changes are expected to be negligible.

	expected to remain unchanged as the transmission lines will not be modified.	
Traffic	No Impact Refer to Record Response 3	No Impact Refer to Record Response 3

NOISE	The predicted future background sound levels for all NEP and MEC transformers at OA operation evaluated in Exhibit KMH-7 shows an increase to the nearest residences as follows: Residence (R1) 250' east, increase of 2 to 4 dBA Residence (R2) 340' east-northeast, increase of 1 to 2 dBA Changes in dB of 1 dB in a constant broadband noise is considered "imperceptible" and of 3 dB "just barely perceptible" whereas a 5 dB change is "clearly noticeable" Reference NEP & MEC Exhibit KMH-7	
	Supplemental Environmental Noise Analysis performed for impact on Residences R1 & R2 shows that the impact of the additional *transmission transformers only* shows an increase to the nearest residences as follows: R1 from 2 to 4 dBA R2 from 1 to 2 dBA Refer to Attachment A to RR-8	Supplemental Environmental Noise Analysis performed for impact on Residences R1 & R2 shows that the impact of the additional *distribution transformers only* shows an increase to the nearest residences as follows: R1 from 1 to 2 dBA R2 from 0 to 1 dBA Refer to Attachment A to RR-8
Hazardous Substances	SF6 is associated with the high voltage switchgear. It is serviced by trained technicians and monitored by alarms if a leak occurs.	

	Battery acid is in sealed containers, racked behind a berm, housed in a control building. An alarm triggers if a leak occurs (hydrogen sensors).	
MA Contingency Plan Sites	The MODF leak at Transformer 2A is in the DEP system as Release Tracking Number 3-21894. Remediation will occur during construction	The MODF leak at Transformer 43L1 is in the DEP system as Release Tracking Number 3-22244. Since it is not involved in the current project, further study will be initiated to determine appropriate remediation in the future.
Water Supply	The expanded facilities will not require additional water supply.	
Wastewater	The expanded facilities will not generate additional wastewater.	
Historical and Archeological Resources	MA Historical Commission, upon review dated 6/10/2004, determined that the project is unlikely to affect significant historic or archeological resources.	
Alternatives (Environmental Assessment) 345 kV DTE 1 – T - 21	From Ward Hill to Route 128 vicinity alternatives B & C would cross or be near 135 wetlands, 22 streams, 39 vernal pools, 6 NHESP estimated habitats and 16 cultural resource sites. Permitting at a minimum would involve the EFSB and multiple Conservation Commissions. For Wakefield to Salem, alternative D would cross or be near the Saugus River, Breakheart Reservation, Lynn Water Supply, Lynn Woods, Outstanding Resource Waters (several), 2 NHESP estimated habitats, vernal pools and wetlands. Permitting at the EFSB and several	

	Conservation Commissions.	
Federal State or Local Permits or Approvals	Haverhill Conservation Commission Order of Conditions; Haverhill Fire Department Fuel Storage Permit.	
	EPA - Storm Water Construction General Permit MA NHESP – Letter approval MA Historical Commission – Stamped Approval MA DEP – Notification of Demolition and Construction for Control House and GIS Building. City of Haverhill Building Permit No triggers for MEPA filing or review.	
Active Railroad	Forty-six passenger and commercial trains daily use the adjacent tracks during the week.	
Other	At completion of both projects, the following substances will be present at the sight. MODF – 84,800 gallons SF6 – 9680 pounds H_2S – 730 gallons Pb – 13,800 pounds	
	change in surface existing / proposed Pavement: 0.85 acres / 1.26 acres Total Impervious Surface (Pavement & Roofs): 0.93 acres / 1.59 acres Gravel: 3.25 acres / 3.47 acres Substation fence: 3.51 acres / 4.42 acres Forested: 13.55 acres / 13.55 acres	
	Television Interference and Stray Voltage The Companies conduct investigations of communication interference in accordance with FCC regulations when complaints are brought by customers, but no problems of this sort are anticipated due to the projects. To prevent stray voltage issues, the Companies will follow IEEE Standard 80, "Guide for Safety in AC Substation Grounding" and applicable best utility practices when designing the substation ground grid.	

Transmission System Impacts	As one of the NEMA/Boston upgrades, the proposed project will improve the reliability of the transmission system and generation import capability of the north shore of Massachusetts. *NEP-1*	
	The proposed project will assure continued compliance with the NEPOOL reliability standards such as keeping transmission equipment within a reasonable range of voltage for foreseeable contingencies such as the loss of a major transmission line. *NEP-1*	
Distribution System Impacts		The proposed project will address load growth in the Haverhill area and will remedy contingencies where certain feeders exceed their capabilities, have insufficient tie capabilities to restore all customers during a single contingency feeder outage and violate the 20MWH feeder design capacity. MEC-1

Prepared by or under the supervision of F. Paul Richards, Kathy Horelik, P.E., Daniel McIntyre, P.E.; Michael J. Busby, P.E., and John W. Martin, P.E.